

**What is claimed is:**

1. A method of generating embroidery data from image data including a plurality of portions, comprising:
  - segmenting the image data into a plurality of object areas;
  - assigning each portion of the image data to only one of the plurality of object areas to form segmented image data; and
  - generating the embroidery data from the segmented image data.
2. A method as defined in claim 1, wherein each portion of the image data corresponds to a pixel.
3. A method as defined in claim 1, further comprising fragmenting at least one of the plurality of object areas into a plurality of fragments to minimize needle repositions associated with the at least one of the plurality of object areas.
4. A method as defined in claim 3, further comprising selecting one of a plurality of stitch angles to minimize a number of fragments associated with the plurality of fragments.

5. A method as defined in claim 1, further comprising forming a common poly-line boundary.
6. A method as defined in claim 5, wherein forming the common poly-line boundary includes using line detection to form the common poly-line boundary.
7. A method as defined in claim 1, further comprising removing at least one of the plurality of object areas having a spatial area smaller than a predetermined value and assigning ones of the plurality of portions making up the at least one removed object area to at least one adjacent remaining object area.
8. A method as defined in claim 1, further comprising smoothing portions of the image data having a contrast below a predetermined threshold.
9. A method as defined in claim 1, further comprising classifying at least one of the plurality of object areas as one of an irregular object and a predominantly regular object based on distance transform and skeletal data.
10. A method as defined in claim 9, further comprising associating a first stitch type with at least one of the plurality of objects classified as irregular and a second

stitch type with at least one of the plurality of objects classified as predominantly regular.

11. A method as defined in claim 10, wherein the first stitch type is a fill stitch and the second stitch type is a column stitch.

12. A method as defined in claim 1, wherein generating the embroidery data includes using at least one interrelationship between characteristic edge contour data and skeletal data to generate the embroidery data.

13. A system for generating embroidery data from image data including a plurality of portions, comprising:

a memory; and

a processor coupled to the memory and programmed to:

segment the image data into a plurality of object areas;

assign each portion of the image data to only one of the plurality of object areas to form segmented image data; and

generate the embroidery data from the segmented image data.

14. A system as defined in claim 13, wherein each portion of the image data corresponds to a pixel.
15. A system as defined in claim 13, wherein the processor is programmed to fragment at least one of the plurality of object areas into a plurality of fragments to minimize needle repositions associated with the at least one of the plurality of object areas.
16. A system as defined in claim 15, wherein the processor is programmed to select one of a plurality of stitch angles to minimize a number of fragments associated with the plurality of fragments.
17. A system as defined in claim 13, wherein the processor is programmed to form a common poly-line boundary.
18. A method as defined in claim 17, wherein the processor is programmed to form the common poly-line boundary by using line detection to form the common poly-line boundary.
19. A system as defined in claim 13, wherein the processor is programmed to remove at least one of the plurality of object areas having a spatial area smaller

than a predetermined value and assign ones of the plurality of portions making up the at least one removed object area to at least one adjacent remaining object area.

20. A system as defined in claim 13, wherein the processor is programmed to smooth portions of the image data having a contrast below a predetermined threshold.

21. A system as defined in claim 13, wherein the processor is programmed to classify at least one of the plurality of object areas as one of an irregular object and a predominantly regular object based on distance transform and skeletal data.

22. A system as defined in claim 21, wherein the processor is programmed to associate a first stitch type with at least one of the plurality of objects classified as irregular and a second stitch type with at least one of the plurality of objects classified as predominantly regular.

23. A system as defined in claim 22, wherein the first stitch type is a fill stitch and the second stitch type is a column stitch.

24. A system as defined in claim 13, wherein the processor is programmed to generate the embroidery data includes using at least one interrelationship between characteristic edge contour data and skeletal data to generate the embroidery data.

25. A machine readable medium having instructions stored thereon that, when executed, cause a machine to:

segment image data including a plurality of portions into a plurality of object areas;

assign each portion of the image data to only one of the plurality of object areas to form segmented image data; and

generate the embroidery data from the segmented image data.

26. A machine readable medium as defined in claim 25, wherein each portion of the image data corresponds to a pixel.

27. A machine readable medium as defined in claim 25 having instructions stored thereon that, when executed, cause the machine to fragment at least one of the plurality of object areas into a plurality of fragments

to minimize needle repositions associated with the at least one of the plurality of object areas.

28. A machine readable medium as defined in claim 27 having instructions stored thereon that, when executed, cause the machine to select one of a plurality of stitch angles to minimize a number of fragments associated with the plurality of fragments.

29. A machine readable medium as defined in claim 25 having instructions stored thereon that, when executed, cause the machine to form a common poly-line boundary.

30. A machine readable medium as defined in claim 29 having instructions stored thereon that, when executed, cause the machine to form the common poly-line boundary using line detection.

31. A machine readable medium as defined in claim 25 having instructions stored thereon that, when executed, cause the machine to remove at least one of the plurality of object areas having a spatial area smaller than a predetermined value and assign ones of the plurality of portions making up the at least one of the plurality of

object areas to at least one adjacent remaining object area.

32. A machine readable medium as defined in claim 25 having instructions stored thereon that, when executed, cause the machine to smooth portions of the image data having a contrast below a predetermined threshold.

33. A machine readable medium as defined in claim 25 having instructions stored thereon that, when executed, cause the machine to classify at least one of the plurality of object areas as one of an irregular object and a predominantly regular object based on distance transform data and skeletal data.

34. A machine readable medium as defined in claim 33 having instructions stored thereon that, when executed, cause the machine to associate a first stitch type with at least one of the plurality of objects classified as irregular and a second stitch type with at least one of the plurality of objects classified as predominantly regular.

35. A machine readable medium as defined in claim 25 having instructions stored thereon that, when executed,



cause the machine to generate the embroidery data using at least one interrelationship between characteristic edge contour data and skeletal data to generate the embroidery data.